

# REVIEW OF FOSSIL GASTROPODS *BURDIKINIA* KNIGHT 1937 AND *AMPHELISSA* ETHERIDGE 1921

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*Burdikinia* is here placed within the Helicotomidae. *Burdikinia axionoides* (Etheridge), from the Middle Devonian of New South Wales is formally included in the genus *Austerum* Heidecker is a junior synonym of *Amphelissa* Etheridge. □ *Gastropods, Devonian, Helicotomidae*.

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The Middle Devonian gastropod *Burdikinia* Knight (1937), with type species *B. burdekinensis* (Etheridge, 1917) is a distinctive, robust, nodose taxon regarded as endemic to northeastern Australia. Erected by Knight (1937) to correct the original assignment of the type species to *Polyamma*, the generic name was a corruption or misspelling of 'Burdekin' either River or Limestone. Despite several studies and reports of *Burdikinia burdekinensis* including taxonomy (Etheridge, 1917; Knight, 1937; Knight, 1941; Heidecker, 1959; Knight et al., 1960) and ecology (Cook, 1993) there has been no conclusion reached on its higher taxonomic placement, partly due to the almost ubiquitous poor preservation of *Burdikinia* specimens. Thus the genus has been relegated to the genera inquirenda (Knight et al., 1960). Discovery of a moderately well-preserved specimen of *B. burdekinensis* finally allows this enigmatic genus to be assigned to a family.

The posthumous publication of Etheridge (1921) of 2 gastropods from the Timor Limestone, Upper Hunter Valley, NSW has been ignored by most studies of Devonian gastropods. Etheridge (1921) erected *Polyamma axionoides* on the basis of 2 worn specimens forwarded to him by the Geological Survey of New South Wales. The only subsequent reference to this taxon is that of Pedder, Jackson & Ellenor (1970) who listed the taxon, assigning the species to '*Burdekinia*' (sic).

Etheridge (1921) also erected *Amphelissa isisensis*, which Pedder, Jackson & Ellenor (1970) listed as *Euomphalus isisensis*. *Austerum* Heidecker bears striking similarity to *Amphelissa* and is synonymised.

## SYSTEMATIC PALAEOLOGY

Superfamily EUOMPHALIDAE de Koninck, 1881  
Family HELICOTOMIDAE Wenz, 1938

### *Burdikinia* Knight 1937

TYPE SPECIES. *Polyamma burdekinensis* Etheridge 1917 by original designation, from the Middle Devonian (Givetian) Fanning River Group, probably lower Burdekin Formation or Big Bend Arkose.

SPECIES INCLUDED. *Burdikinia burdekinensis* (Etheridge, 1917), Middle Devonian (Givetian), north Queensland; *Burdikinia axionoides* (Etheridge, 1921) from the Middle Devonian (Givetian) Timor Limestone, New South Wales.

DISTRIBUTION. Burdekin Subprovince, N Queensland; Broken River Province, N Queensland; Timor Area, Upper Hunter, New South Wales.

REMARKS. Poor preservation has been the single contributing factor to the lack of understanding of the systematic position of *Burdikinia*. *Burdikinia burdekinensis* occupied high-energy, nearshore environments (Cook, 1993). Consequent abrasion of shell material obliterated all but gross shell detail. Subsequent recrystallisation of much of the available material also obscured taxonomic features, such as the position of the sinus (if any) or selenizone (if any). In addition specimens are usually not conducive to preparation due to the lack of mechanical (and chemical) difference between surrounding matrix and the recrystallised shell.

*Burdikinia axionoides* (Etheridge, 1921) differs from the type species, being more squat, and lacking the prominent cords on the lower whorl face. The lectotype of *B. axionoides*, (Fig. 1D,E) here designated as MMF16014, shows the sinus to be on the flattened upper whorl face, between

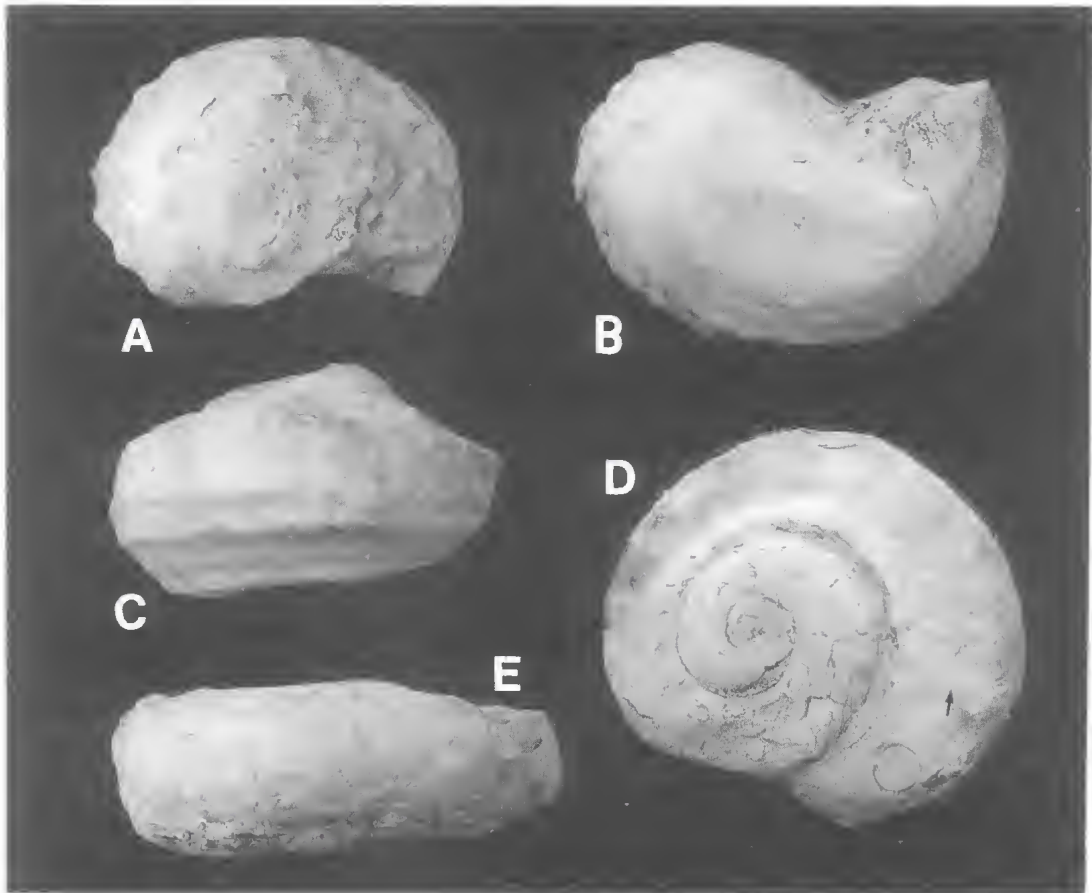


FIG. 1. A-C, *Burdikinia burdekinesis* (Etheridge), QMF35452. A, apical view, arrow shows sinus position, X1; B, side view, X1; C, basal view. D-E, *Burdikinia axionoides* (Etheridge), Lectotype MMF16014 X1. D, apical view, arrow shows sinus; E, side view.

the suture and the nodose cord. The only other specimen of the original suite examined by Etheridge (1921), MMF16015 is poorly preserved and lacks any particular diagnostic features.

*Burdikinia* is here placed in the Helicotomidae because of the dominance of spiral ornament, and particularly the prominent nodose carina bordering the flattened upper whorl surface, and the presence of the shallow sinus on the upper whorl surface between the suture and the bordering carina. The anomphalous base is unlike other Helicotomidae, but reflects great shell thickening as a probable ecological adaptation.

***Burdikinia burdekinensis* (Etheridge, 1917)**  
(Fig. 1A-C)

MATERIAL EXAMINED. HOLOTYPE: GSQF926.  
NEW MATERIAL: QMF35452 from Big Bend, near Charters Towers, NQ.

**ADDITIONAL DESCRIPTION.** See also Etheridge (1917) and Heidecker (1959). Growth lines are fine and numerous; prosocline from the uppermost and peripheral spiral cord, strongly recurved about the base towards the axis; these lines are uninterrupted across the lower whorl surface. The weak sinus is located on the upper whorl face regarded here as a subsutural ramp. The nodes on the spiral cords are solid (as noted by Heidecker) in deference to Knight et al. (1960).

**REMARKS.** The new material places the sinus accurately and refutes any presence of a selenizone.

***Amphelissa* Etheridge 1921**

*Amphelissa* Etheridge 1921: 2; Knight 1941: 34.  
*Austerum* Heidecker 1959: 6.

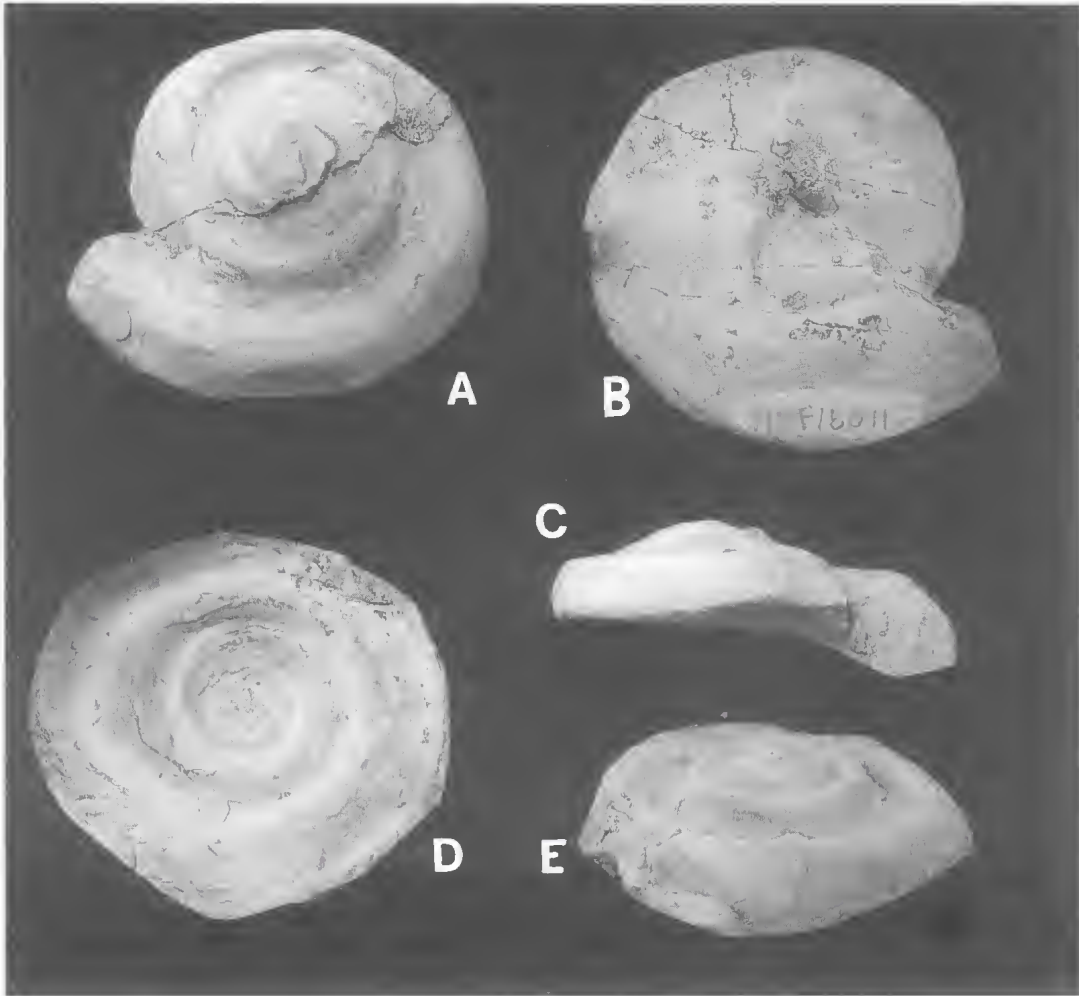


FIG. 2. *Amphelissa isisensis* Etheridge. A-C, Holotype MMF16011, X1, apical, basal and apertural views respectively. D-E, MMF16024, x1. D, apical view; E, side view, note fine growth lines.

**TYPE SPECIES.** By monotypy. *Amphelissa isisensis* Etheridge 1921 from the Middle Devonian Timor Limestone, NSW.

**OTHER SPECIES INCLUDED.** *Amphelissa carinatum* (Heidecker) 1959, from the Middle Devonian Burdekin Formation, north Queensland.

**REMARKS.** *Amphelissa* presented problems to Knight (1941) who was unable to access type materials, due to their misplacement. Consequently, and due to the poor quality of the original illustrations, Knight (1941) regarded the genus as probably widely phaneromphalus. On the holotype of *A. isisensis* (Fig 2A-C) the base is flattened, and the umbilicus is very shallow, wide and

partially plugged by shell, thus hemiomphalus. This is an identical condition to the base of the holotype of *Austerum carinatum* Heidecker. In *A. isisensis* there are well-preserved, fine, numerous growth lines (Fig. 2D,E), which are not preserved on specimens of the north Queensland species.

Heidecker (1959) may have been unaware of the taxon described by Etheridge (1921) from the Timor Limestone which has gone largely ignored. *Amphelissa* was suppressed by Knight et al. (1960), who synonymised it with *Straparollus* (*Euomphalus*). *Amphelissa* Etheridge cannot be accommodated in *Straparollus* (*Euomphalus*) given the hemiomphalus condition. *Amphelissa* is thus resurrected as a valid genus. *Amphelissa carinatum* (Heidecker) differs from the type in

being higher-spired. The holotype of *Amphelissa isisensis*, designated by Knight (1941), is registered in the Geological Survey of New South Wales Collection as MMF16011. The paratypes designated by Knight (1941) are registered under MMF16012.

#### ACKNOWLEDGEMENTS

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